Reduce unnecessary routine vitamin D testing

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Case introduction

Laura is a 40-year-old engineer of eastern European ancestry who presents to your office to request testing of her vitamin D levels. She generally wears sunscreen in the summer and wears sun-protective clothing year round. She is fairly healthy, eating a balanced diet high in fresh fruits and vegetables, but experiences migraines for which she takes triptans for rescue about 4 times per year. She and her partner own a house in a middle-class neighbourhood where they live with their son. Laura informs you that her mother has been taking vitamin D supplements for many years based on her doctor's recommendations to improve her bone health. Additionally, Laura tells you that her neighbour, a nurse about her age, recently had her vitamin D levels checked and they were "very low," so she has considered starting vitamin D supplementation.

Laura is hoping that by testing her vitamin D levels she will know how much supplementation she needs to take to protect her from COVID-19, cancer, and fractures as she gets older. Laura is worried that her levels might be low because she avoids direct sunlight and is concerned that she may be missing an easy opportunity to improve her health with supplementation she can afford.

In many family medicine practices, requests for tests by patients are a common occurrence. These requests might occur as part of visits about preventive health matters or be prompted by patient concerns. In the case of routine testing of vitamin D levels, literature suggests that it is driven by several factors, including media attention describing correlational studies connecting lack of vitamin D to various health concerns, and physicians promoting its use.[1-10] During the height of the COVID-19 pandemic there were reports on studies that described associations between vitamin D deficiency and morbidity or mortality due to COVID-19 infection.[11-14]

Multiple evidence-synthesizing organizations, including Choosing Wisely Canada, Osteoporosis Canada, the United Kingdom (UK) National Institute for Health and Care Excellence, the Royal Australian College of General Practitioners, and the United States (US) Preventive Services Task Force, recommend against testing vitamin D levels in most patients. The reason for the similarity of these recommendations is the consistent evidence demonstrating that in healthy adults low vitamin D levels are not associated with any disease.[13,15-21] Of importance, the US Preventive Services Task Force conducted a systematic review in 2021 that did not identify any studies that showed vitamin D screening improved health outcomes.[18] The same study also did not find it caused any direct harms.

Costs and provider burden

For health systems focused on trying to achieve the Quadruple Aim,[22] reducing vitamin D testing can be an achievable means to do so. Studies from the UK, the US, Canada, and Australia suggest that up to 75% of vitamin D testing may be unnecessary.[9,23-27] Reductions in unnecessary vitamin D testing limit provider burden to follow up on results, do not impact patient experiences or outcomes, and improve the value of health care expenditures.

In many cases it is simpler to order a vitamin D test in response to a patient's request; however, doing so may be potentially harmful to patients due to the unnecessary testing cascade that can follow an abnormal result.[28] Additionally, because of the lack of evidence to support any kind of routine or follow-up vitamin D measurements, in some Canadian jurisdictions testing is no longer insured or even available without specific medical information, thus causing patients who may not be able to afford testing to incur a direct cost.[29,30] Finally, health care budgets are not infinite and family physicians should be considerate of their role as stewards of this limited resource. The annual, not-insignificant cost of vitamin D testing is estimated to be approximately £17 million in the UK,[31] A$104.7 million in Australia,[32] $30 million in Canada,[25] and $293 million (US) in the US.[25]

Unnecessary testing

Perhaps the most salient reason why routine vitamin D testing is unnecessary is that supplementation can be started regardless of blood levels. In fact, some guidelines continue to recommend vitamin D supplementation, particularly in northern climates such as Canada's, regardless of blood levels.[13,33] Vitamin D supplementation, particularly in northern climates and for patients with dark or pigmented skin, is still recommended by some guidelines despite any specific link to patient-oriented outcomes.[13,18,34] In fact, a large randomized trial demonstrated supplemental vitamin D does not reduce the risk of fracture in older adults, even in those with low baseline levels or a previous fracture.[35]

Stewardship

Family physicians may be concerned that restricting testing in patients will negatively impact patient experience.

However, there is strong evidence from stewardship efforts in primary care environments that patients are satisfied if they believe that the physician has listened to their concerns even if they did not receive a requested test.[36-38] An approach to patients who request care that "seems unreasonable" by the Canadian Task Force on Preventive Health Care can be found in **Figure 1**.[39]

In a recent article in the *BMJ*, we outlined several practice-level strategies to support family physicians and health care system stakeholders who are interested in reducing vitamin D testing.[40] Discussion support tools can assist family physicians with the difficult conversations that can occur regarding vitamin D testing if they are inclined not to order unnecessary testing.[39,41,42] Sharing information allows patients and physicians to achieve a better understanding of health concerns and reach an agreement on goals.[43] Moreover, requests for vitamin D testing can create opportunities for better patient engagement and moments to use shared decision-making skills.[43]

Box 1 is reproduced from our *BMJ* article and provides tips to help family physicians explore patient concerns that drive this type of request for testing.[40] There are also several strategies outlined in our article on how to reduce unnecessary vitamin D testing using evidence-based approaches to quality improvement.[40]

Box 1. Examples of questions and responses for a conversation with patients requesting vitamin D testing

Patient: "I would like a vitamin D level to test my status."
Physician (options to respond):
- "There is a lot of attention to vitamin D. What have you read or heard that leads you wonder about this?"
- "I would like to understand what you are most concerned about that leads to your request."

Patient: "I've heard that deficiency in vitamin D can cause [disease or concern]."
Physician (validation):
- "Oh, I can understand your concern about [name it specifically]."
- "Perhaps I can tell you more about that issue and we can then decide together whether you need a vitamin D level or not."

Physician (information exchange—brief and avoid medical jargon):
- Present key information about the patient's specific concern; how we get vitamin D from sunlight or supplements; the high-risk groups that can be vitamin D deficient (indicating whether the patient is in any of these); and the best evidence about not testing but using supplementation

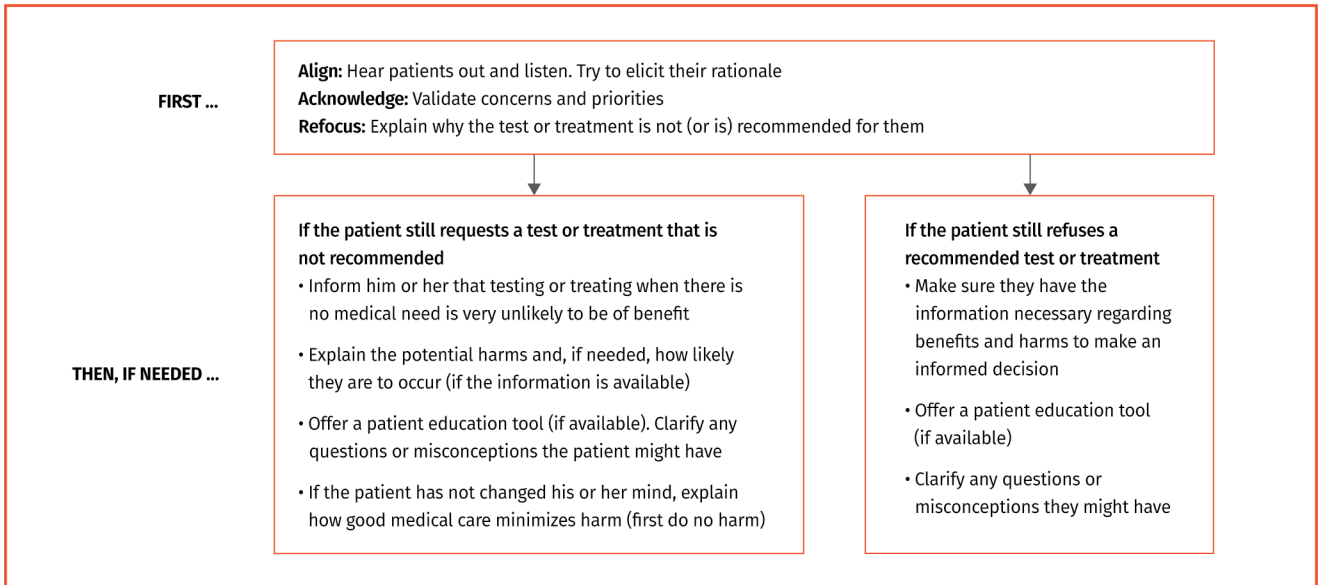
Physician (check in and respond to questions):
- "What do you think of the information I presented? How does this fit for you?"
- Address patient questions and come to a shared decision

Reproduced from McChesney et al.[40]

Case resolution

Upon further discussion with Laura regarding her interest in vitamin D testing, she reveals that a friend was recently diagnosed with cervical cancer and she had an uncle die from COVID-19. You review her chart and note that she is due for her cervical cancer screening, which can be done at a follow-up visit. You are able to reassure her that since she has been vaccinated against COVID-19 her risk of serious illness and death is substantially reduced and there is no evidence that vitamin D supplementation will impact her future risk.

Figure 1. Approach for when patients' requests seem unreasonable



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She remains interested in taking vitamin D in the winter since she can afford it, so you inform her that while it is not necessary, it has also not been shown to be harmful. At an upcoming practice meeting you suggest to your colleagues that they consider a practice audit of vitamin D testing and an education session to review current recommendations on the topic.

Conclusion

While vitamin D testing is mostly benign, it can harm patients by exposing them to unnecessary concern and testing cascades that can cause harm. It is important for family physicians to be active stewards of limited health resources, and illuminating unnecessary routine testing of vitamin D is a viable means to reduce health care costs with no evidence of impact on patient outcomes.

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Competing interests

None declared

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Choosing Wisely Canada is a campaign designed to help clinicians and patients engage in conversations about unnecessary tests, treatments, and procedures and to help physicians and patients make smart and effective choices to ensure high-quality care is provided. To date there have been 13 family medicine recommendations, but many of the recommendations from other specialties are relevant to family medicine. Articles produced by Choosing Wisely Canada in *Canadian Family Physician* are on topics related to family practice where tools and strategies have been used to implement one of the recommendations and to engage in shared decision making with patients. If you are a primary care provider or trainee who has used Choosing Wisely recommendations or tools in your practice and you would like to share your experience, please contact us at **info@choosingwiselycanada.org**.